



1           3. A polarizing element according to Claim  
1, wherein a half wavelength optical phase plate is  
disposed in the optical path of at least one of said  
first and second polarized lights to vary the  
5           polarized state of at least one of said first and  
second polarized lights to thereby make the polarized  
states of said two polarized lights coincident with  
each other.

10           4. A polarizing element according to Claim  
1, wherein a half wavelength optical phase plate is  
formed at a predetermined location on said one  
surface or said other surface of said plane parallel  
plate to vary the polarized state of at least one  
15           of said first and second polarized lights to thereby  
make the polarized states of said two polarized  
lights coincident with each other.

20           5. A polarizing conversion unit having:  
an illuminating system for supplying a  
lattice-like light pattern; and  
a polarizing element for converting said  
lattice-like light pattern into substantially dense  
polarized light;  
25           said polarizing element having a polarizing  
dividing surface disposed on one surface of a plane  
parallel plate and a reflecting surface disposed on

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1 emitting elements.

8. A polarizing conversion unit according  
to Claim 5, wherein said illuminating system is  
5 provided with a single light source portion, and a  
cylindrical lens for dividing the light from said  
light source portion into a plurality of partial  
lights.

10 9. A polarizing conversion unit according  
to Claim 5, wherein said illuminating system is  
provided with a single light source portion, and  
a fly-eye lens for dividing the light from said  
light source portion into a plurality of partial  
15 lights.

10. A polarizing conversion unit according  
to Claim 5, wherein a half wavelength optical phase  
plate is disposed in the optical path of at least  
20 one of said first and second polarized lights to vary  
the polarized state of at least one of said first and  
second polarized lights to thereby make the polarized  
states of said two polarized lights coincident with  
each other.

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11. A polarizing conversion unit according  
to Claim 10, wherein said half wavelength optical

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1 said illuminating system enters from said one  
surface.

19. A polarizing conversion unit according  
5 to Claim 18, wherein said reflecting surface is  
formed on substantially the whole of said other  
surface of said plane parallel plate.

20. A polarizing conversion unit according  
10 to Claim 5, wherein said polarizing dividing surface  
is disposed on one surface of said plane parallel  
plate, and the lattice-like light from said  
illuminating system enters from said one surface  
or said other surface.

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21. A projector having:  
an illuminating system for supplying a  
lattice-like light pattern:

a polarizing element for converting said  
20 lattice-like light pattern into substantially dense  
polarized light;

said polarizing element having a polarizing  
dividing surface disposed on one surface of a plane  
parallel plate and a reflecting surface disposed on  
25 the other surface of the plane parallel plate, the  
lattice-like light pattern from said illuminating  
system entering obliquely from said one surface or





5 said polarizing element having a polarizing  
dividing surface disposed on one surface of a plane  
parallel plate and a reflecting surface disposed on  
the other surface of the plane parallel plate, said  
lattice-like light pattern entering obliquely from  
said one surface or said other surface, partial  
10 lights forming said lattice-like light pattern being  
divided into first and second polarized lights  
differing in polarized state from each other by said  
polarizing dividing surface, said first polarized  
light being directed in a first direction, said  
15 second polarized light being reflected by said  
reflecting surface and directed in said first  
direction, the polarized state of at least one of  
said first and second polarized lights being varied  
to thereby make the polarized states of said first  
20 and second polarized lights coincident with each  
other;

an image generator for modulating said dense polarized light in conformity with a video signal to thereby generate image light, said generator being disposed in the optical path of each of said red, green and blue lights and generating each of red, green and blue image lights; and

23. A projector having:  
a light source for supplying light;  
color resolving means for resolving said  
light into red, green and blue lights;

15 a polarizing element disposed near said  
converting means for converting each of said lattice-  
like light patterns into substantially dense  
polarized light

said polarizing element having a polarizing  
dividing surface disposed on one surface of a plane  
parallel plate and a reflecting surface disposed  
on the other surface of the plane parallel plate,  
said lattice-like light pattern entering obliquely  
from said one surface or said other surface, partial  
lights forming said lattice-like light pattern being  
divided into first and second polarized lights  
differing in polarized state from each other by said  
polarizing dividing surface, said first polarized  
light being directed in a first direction, said

an image generator for modulating said  
dense polarized light in conformity with a video  
10 signal to thereby generate image light, said  
generator being disposed in the optical path of  
each of said red, green and blue lights and  
generating each of red, green and blue image lights;  
and  
15 a projecting optical system for projecting  
said image light.

24. A polarizing element for dividing light into reflected light and transmitted light differing in polarization direction from each other by a polarizing dividing surface, reflecting said reflected light by a reflecting surface and directing it in a direction substantially parallel to said transmitted light, and varying the polarization direction of said reflected light to thereby make it coincident with the polarization direction of said transmitted light, characterized in that said

25. A polarizing element according to Claim 24, wherein a quarter wavelength optical phase plate is provided on substantially the whole surface between said one surface of said plane parallel plate and said polarizing dividing surface to vary the polarization direction of said reflected light to thereby make it coincident with the polarization direction of said transmitted light.

25.

27. A polarizing element according to Claim 24, wherein a quarter wavelength optical phase plate

1 is provided on substantially the whole of said other  
surface of said plane parallel plate and between said  
plane parallel plate and said reflecting surface to  
vary the polarization direction of said reflected  
5 light to thereby make it coincident with the  
polarization direction of said transmitted light.

28. A polarizing element according to Claim 24, wherein an optically active substance is provided on substantially the whole of said other surface of said plane parallel plate and between said plane parallel plate and said reflecting surface to vary the polarization direction of said reflected light to thereby make it coincident with the polarization direction of said transmitted light.

29. A polarizing element according to Claim 24, wherein said plane parallel plate is formed of an optically active substance to vary the polarization direction of said reflected light to thereby make it coincident with the polarization direction of said transmitted light.

25 30. A polarizing conversion unit having:  
an illuminating system for supplying a  
lattice-like light pattern; and  
a polarizing element for converting said

1 lattice-like light pattern into substantially dense  
polarized light;

5 said polarizing element having a polarizing  
dividing surface provided on substantially the whole  
of one surface of a plane parallel plate and a  
reflecting surface intermittently provided on the  
other surface of the plane parallel plate, the  
lattice-like light pattern from said illuminating  
system entering obliquely from said other surface,  
10 partial lights forming said lattice-like light  
pattern being divided into reflected light and  
transmitted light differing in polarization direction  
from each other by said polarizing dividing surface,  
said reflected light being reflected by said  
15 reflecting surface and directed in a direction  
substantially parallel to said transmitted light,  
the polarization direction of said reflected light  
being varied to thereby make it coincident with the  
polarization direction of said transmitted light.

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31. A polarizing conversion unit according  
to Claim 30, wherein said illuminating system is  
provided with a light source portion comprising a  
number of light emitting elements arranged side by  
25 side, and cylindrical lenses corresponding to said  
light emitting elements.

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33. A projector having:  
an illuminating system for supplying a  
lattice-like light pattern;  
a polarizing element for converting said  
lattice-like light pattern into substantially dense  
polarized light;

15 said polarizing element having a polarizing  
dividing surface provided on substantially the whole  
of one surface of a plane parallel plate and a  
reflecting surface intermittently provided on the  
other surface of the plane parallel plate, the  
lattice-like light pattern from said illuminating  
20 system entering obliquely from said other surface,  
partial lights forming said lattice-like light  
pattern being divided into reflected light and  
transmitted light differing in polarization direction  
from each other by said polarizing dividing surface,  
25 said reflected light being reflected by said  
reflecting surface and directed in a direction  
substantially parallel to said transmitted light,

1 the polarization direction of said reflected light  
being varied to thereby make it coincident with the  
polarization direction of said transmitted light;  
an image generator for modulating said dense  
5 polarized light in conformity with a video signal to  
thereby generate image light; and  
a projecting optical system for projecting  
said image light.

10 34. A projector having:  
a light source for supplying light;  
color resolving means for resolving said  
light into red, green and blue lights;  
means for converting each of said red,  
15 green and blue lights into a lattice-like light  
pattern, said means being disposed in the light path  
of each of said red, green and blue lights;  
a polarizing element disposed in the optical  
path of each of said red, green and blue lights for  
20 converting each of said lattice-like patterns into  
substantially dense polarized light;  
said polarizing element having a polarizing  
dividing surface provided on substantially the whole  
of one surface of a plane parallel plate and a  
25 reflecting surface intermittently provided on the  
other surface of the plane parallel plate, the  
lattice-like light pattern from said illuminating

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1 system entering obliquely from said other surface,  
partial lights forming said lattice-like light  
pattern being divided into reflected light and  
transmitted light differing in polarization direction  
5 from each other by said polarizing dividing surface,  
said reflected light being reflected by said  
reflecting surface and directed in a direction  
substantially parallel to said transmitted light,  
the polarization direction of said reflected light  
10 being varied to thereby make it coincident with the  
polarization direction of said transmitted light;

an image generator for modulating said dense  
polarized light in conformity with a video signal  
to thereby generate image light, said generator being  
15 disposed in the optical path of each of said red,  
green and blue lights and generating each of red,  
green and blue image lights; and

a projecting optical system for projecting  
said image light.

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35. A projector having:

a light source for supplying light;

color resolving means for resolving said  
light into red, green and blue lights;

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means for converting each of said red,  
green and blue lights into a lattice-like light  
pattern, said means being disposed in the common

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5 a polarizing element disposed near said  
converting means for converting each of said lattice-  
like light patterns into substantially dense  
polarized light;

an image generator for modulating said dense  
25 polarized light in conformity with a video signal to  
thereby generator image light, said generator being  
disposed in the optical path of each of said red,

